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31 August 2000

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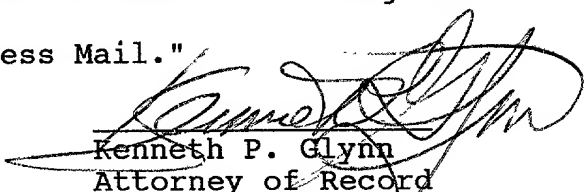
Sir:

Transmitted herewith for filing is:

Inventor: Jerome R. Mahoney
For: Voice Activated/Voice Responsive Item Locator
Docket No.: IVC-103A

Enclosed are:

- | | |
|---|---|
| (x) The Patent Application | (x) Declaration and Certification and Power of Attorney |
| (x) Copies of Prior Art References | () Certified Copy of Application |
| (x) Small Entity Status Declaration | |
| (x) Information Disclosure Statement (included in specification) | (x) 3 Sheets of drawings |
| (x) PTO 1449 | |
| (x) An Assignment of the invention to: iVoice.com, Inc. | |
| (x) Check No. 874 in the amount of \$385.00 to cover the filing fee | |
| (x) A certification of mailing by "Express Mail." | |

KPG:erk
Enclosures
CC: iVoice.com, Inc.
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[illegible]


Steven P. Glynn

(Docket No. IVC-103A)

Applicant or Patentee: Jerome R. Mahoney Attorney's Docket No.: IVC-103A
Serial No. or Patent No.: _____
Filed or Issued: _____
For: Voice Activated/Voice Responsive Item Locator

Appendix E

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS (37 CFR 1.9 (f) and 1.27 (b)) - INDEPENDENT INVENTOR

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9 (c) for purpose of paying reduced fees under section 41 (a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled Voice Activated/Voice Responsive Item Locator

described in

- (X) the specification filed herewith
() application serial no. _____, filed _____
() patent no. _____, issued _____

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9 (c) if that person had made the invention, or to any concern under 37 CFR 1.9 (d) or a non-profit organization under 37 CFR 1.9 (e).

I have not assigned, granted, conveyed or licensed nor am I under any obligation under contract or law to assign, grant, convey or license any rights in this invention to any person, concern or organization which would not qualify as a small business concern under 37 CFR 1.9 (d) or a non-profit organization under 37 CFR 1.9 (e).

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate (37 CFR 1.28 (b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Name of Inventor Jerome R. Mahoney	Name of Inventor	Name of Inventor
Signature of Inventor <i>J. Mahoney</i>	Signature of Inventor	Signature of Inventor
Date 8/7/2000	Date	Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

VOICE ACTIVATED/VOICE RESPONSIVE ITEM LOCATOR

Inventor: Jerome R. Mahoney

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VOICE ACTIVATED/VOICE RESPONSIVE ITEM LOCATOR

Attorney Docket No: IVC-103A

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BACKGROUND OF THE INVENTION

1. Field of the Invention

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The present invention relates to voice activated/voice responsive item locators, i.e. item directories which direct a user such as a consumer or shopper, to a specific location to view, treat, retrieve, order, purchase or otherwise use the information obtained in the system. Typically, the present invention could be used at retail stores to locate items to be purchased. Alternatively, it could be used at a production facility or distribution facility having a large number of parts, to locate specific parts for an employee. In other

embodiments, it could be used in non-commercial entities, such as a public library to locate a particular book. The locator of the present invention relies upon a specific software module to accomplish voice recognition and response, and includes manager programming for customization, updates and modifications.

2. Information Disclosure Statement

The following prior art patents represent various inventions relating to machines involving speech recognition for voice-based operation and thus illustrate known voice recognition applications:

U.S. Patent No. 5,111,501 to Masanobu Shimanuki describes a telephone terminal device equipped with a transmitter microphone, a

receiver, a speech recognition unit that receives
and recognizes speech signals from the
transmitter microphone and a circuit to reduce
the level of signals send from a telephone
network to the receiver when the speech
recognition unit receives speech signals from the
transmitter microphone. Further, this device is
preferably equipped with a speech reproduction
unit that reproduces the speech information
stored in a memory, in response to the
information of recognition result from the speech
recognition unit, and a circuit that prevents
transmission of signals from the telephone
network to the receiver when the regenerated
speech information is sent to the receiver.
Furthermore, it is desirable for this device to

be provided with a circuit that prevents generation of ringing tones when an incoming call arrives.

U.S. Patent No. 5,136,634 to David C. Rae et

5 al. describes voice operated facsimile machine network which includes a method and apparatus for transmitting specifically requested graphic and/or textual data from an unattended database storage location to a requestor's facsimile machine over a telephone line which includes a 10 host computer such as a PC modified with a facsimile transmission board and a voice generation board. The host computer receives incoming phone calls and prompts the caller using 15 the voice board to select data files by using the DTMF keys of a standard telephone handset. The

PC can be left unattended and can run
automatically in the facsimile transmission mode.
Callers can immediately access needed textual and
image data with the use of just a standard
5 telephone and facsimile machine. Multiple
workstation nodes can be configured in a network
setup to handle a high volume of calls in real
time and to allow multiple data services to
operate simultaneously.

10 U.S. Patent No. 5,165,095 to Mark A.
Borcherding describes a method for dialing a
telephone, using voice recognition to initiate
the dialing and to determine the correct
telephone number. The dialing is initiated with
15 a spoken dial command that is recognized by using
speaker independent templates that are stored

locally with respect to the caller's telephone.

The correct telephone number is recognized by
using speaker dependent template that are
downloaded from a central database or by using
5 speaker independent templates stored locally.

U.S. Patent No. 5,168,548 to Steven Kaufman
et al. describes a reporting system which is
disclosed herein, a speech recognizer which is
used to select selections of text from a report
10 form stored in a computer and to insert
recognized terms in the text thereby to generate
a report text under voice control. A command
interpreter, also responsive to spoken words,
initiates creation of the report text and its
15 subsequent storing, printing and transmission.

The command processor is responsive to respective

spoken commands to select a destination telephone
number and to cause the report text to be sent to
apparatus for converting report text to image
data and for modulating an audio band signal with
5 the image data for facsimile transmission over
telephone lines.

U.S. Patent No. 5,222,121 to Keiko Shimada
describes a voice recognition dialing unit of a
telephone mounted on a vehicle or similar mobile
10 body and which allows a call to be originated
with ease. When the user of the telephone enters
a voice command on voice inputting section, the
dialing unit originates a call automatically and
thereby connects the other party to the telephone
15 line. In a call origination procedure, the
operations for call origination and the

verifications are performed between the user and
the unit in an interactive sequence. In a
preferred embodiment, the unit has a particular
call origination procedure in which, when the
5 other party recognized by the unit is wrong as
determined by the user by verification, lower
place candidates for the other party are called
up in response to a particular voice command. In
an alternative embodiment, the unit indicates the
10 other party by voicing a name for verification
purpose. The alternative embodiment selects and
stores only the name of the other party in
response to an entered voice signal and, in the
event of response for verification, combines the
15 name having been stored and response information
stored beforehand to produce composite response

voice.

U.S. Patent No. 5,231,670 to Richard S. Goldhor et al. describes a system and method for generating text from a voice input that divides the processing of each speech event into a dictation event and a text event. Each dictation event handles the processing of data relating to the input into the system, and each text event deals with the generation of text from the inputted voice signals. In order to easily distinguish the dictation events from each other and text events from each other the system and method creates a data structure for storing certain information relating to each individual event. Such data structures enable the system and method to process both simple spoken words as

well as spoken commands and to provide the
necessary text generation in response to the
spoken words or to execute an appropriate
function in response to a command. Speech
5 recognition includes the ability to distinguish
between dictation text and commands.

U.S. Patent No. 5,239,586 to Kuniyoshi Marui
describes a voice recognition system which
comprises a handset and a hands-free microphone
10 for generating an input audio signal, a high-pass
filter for eliminating low frequency components
from the signal from the handset or hands-free
microphone, a signal level controller for
adjusting the level of the high-pass signal in
15 response to the user of either the handset or
hands-free microphone, a storer for storing the

speech data and a controller for controlling the
storer so that a user's utterance is stored or
the user's utterance is recognized by comparing
the utterance to speech data already stored. The
5 handset hook switch provides an on-hook control
signal to reduce amplifier gain during hands-free
microphone operation.

U.S. Patent No. 5,301,227 to Shoichi Kamei
et al. describes an automatic dial telephone that
10 is useable in a motor vehicle, when a voice input
is provided during a period in which input of the
names of called parties is awaited, a voice
pattern of the name of the called party is
compared with reference patterns of called
15 parties stored in reference patterns storing
device, to determine the degree of the similarity

therebetween. The names of the called parties are output to a user in the order of decreasing degree of similarity. Each time the name of a called party is output, a command word for confirmation is waited from a user for a predetermined time period. When a voice confirmation command is input and is recognized during this waiting period, a telephone number corresponding to the name of the called party is supplied to a channel. Consequently, the command word for confirmation may be input only if the name of the called party outputted is one desired by the user. Sensors continually monitor the driving condition of the motor vehicle in which the telephone is installed. When the operation of the steering wheel or brakes of the motor

vehicle exceeds a predetermined threshold or the speed of the motor vehicle is excessive, the sensors generate safety signals that inhibit the operation of the telephone.

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U.S. Patent No. 5,335,276 to E. Earle

Thompson et al. describes a communication system which is provided with multiple purpose personal communication devices. Each communication device includes a touch-sensitive visual display to communicate text and graphic information to and from the user and for operating the communication device. Voice activation and voice control capabilities are included within communication devices to perform the same functions as the touch-sensitive visual display. The communication device includes a built-in modem,

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audio input and output, telephone jacks and
wireless communication. A plurality of
application modules are used with personal
communication devices to perform a wide variety
of communication functions such as information
retrievable, on-line data base services,
electronic and voice mail. Communication devices
and application modules cooperate to allow
integrating multiple functions such as real time
communication, information storage and
processing, specialized information services, and
remote control of other equipment into an
intuitively user friendly apparatus. The system
includes both desktop and hand-held communication
devices with the same full range of communication
capabilities provided in each type of

communication device.

U.S. Patent No. 5,349,636 to Roberto

Irribarren describes a communication system for
verbal telephonic communication which has a voice

5 message system for storing and retrieving voice

messages integrated with a computer database

accessing system for storing and retrieving text

messages from a separate computer system and for

converting the text messages into voice. The

10 systems are integrated via a network which

coordinates the functions of each individual

system. Additionally, the input/output ports of

the voice message system and the computer

database accessing system are connected in a

15 parallel fashion to at least one telephone line.

In this configuration a user may access both

voice messages and database information,
including text or electronic mail messages, with
a single telephone call. Optionally, facsimile
messages can be stored, retrieved and manipulated
5 with a single telephone call.

U.S. Patent No. 5,406,618 to Stephen B.
Knuth et al. describes a telephone answering
device that is activated by a proximity sensor
when a user crosses its field of detection and
whose operation is controlled by simple voice
10 commands. The device incorporates speaker-
independent voice recognition circuitry to
respond to spoken commands of the user that are
elicited by a system generated voice request
15 menu. The telephone answering device performs
all the basic functions of a telephone answering

machine in response to these simple commands and there is no need for the user to manually operate the telephone answering device.

U.S. Patent No. 5,602,963 to W. Michael

5 Bissonnette et al. describes a small, portable, hand-held electronic personal organizer which performs voice recognition on words spoken by a user to input data into the organizer and records voice messages from the user. The spoken words and the voice messages are input via a 10 microphone. The voice messages are compressed before being converted into digital signals for storage. The stored digital voice messages are reconverted into analog signals and then expanded 15 for reproduction using a speaker. The organizer is capable of a number of different functions,

including voice training, memo record, reminder,
manual reminder, timer setting, message review,
waiting message, calendar, phone group select,
number retrieval, add phone number, security and
5 "no" logic. During such various functions, data
is principally entered by voice and occasionally
through use of a limited keypad, and voice
recordings are made and played back as
appropriate. A visual display provides feedback
10 to the user. During the various function, the
user can edit various different data within the
organizer by eliminating or correcting such data
or entering new data.

U.S. Patent No. 5,621,658 to Brion K.

15 Jackson describes an action contained within an
electronic mail object which is communicated from

a data processing system to another data processing system via an audio device. The action is executable on a data processing system. At the sending data processing system, the action is converted to a predetermined audio pattern.

The electronic mail object may contain text in addition to an action. The text is also converted to an audio pattern. The audio patterns are then communicated to the audio device over telephone lines or other communication medium. At the receiving end, the audio device records the object. A user can provide the recorded object to a data processing system, which then executes the action and converts the text audio patterns back to text.

In addition, the action can be converted to text

and displayed on the data processing system.

U.S. Patent No. 5,631,745 to John J. Wong et al. describes a telephone terminal adapted for business or home use that includes the ability to receive and send facsimiles, a voice answering function and a computer modem. Various input and output devices may be used for the facsimile function. A voice annotated facsimile may be sent and received. At the same time the facsimile is viewed on a video monitor or ordinary television set, an accompanying voice message is heard through the sound system of the monitor or television set. The terminal has an architecture including a central processor and an internal bus structure to which several types of memory, various input-output devices and an

interface with the telephone line are connected,
among others. Audio Random Access Memory (ARAM)
is used for storing both facsimile data and voice
data.

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U.S. Patent No. 5,671,328 to Gregory P.

Fitzpatrick et al. describes a method and data
processing system which are disclosed for
automatically creating voice processing template
entries. In one embodiment, the invention
automatically assembles a plurality of commands
received by the data processing system, at least
one of said commands having a voice recognition
criteria component associated therewith, counts
the occurrences of the plurality of commands,
assembles voice recognition criteria components
associated with the plurality of commands, and,

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as a result of the occurrence count exceeding a
predefined minimum, constructs a voice
recognition template entry by associating the
assembled voice recognition criteria components
5 with the assembled plurality of commands.

U.S. Patent No. 5,850,627 to Joel M. Gould
et al. describes a word recognition system which
can: respond to the input of a character string
from a user by limiting the words it will
10 recognize to words having a related, but not
necessarily the same, string; score signals
generated after a user has been prompted to
generate a given word against words other than
the prompted word to determine if the signal
15 should be used to train the prompted word; vary
the number of signals a user is prompted to

generate to train a given word as a function of
how well the training signals score against each
other or prior models for the prompted word;
create a new acoustic model of a phrase by
5 concatenating prior acoustic models of the words
in the phrase; obtain information from another
program running on the same computer, such as its
commands or the context of text being entered
into it, and use that information to vary which
10 words it can recognize; determine which program
unit, such as an application program or dialog
box, currently has input focus on its computer
and create a vocabulary state associated with
that program unit into which vocabulary words
15 which will be made active when that program group
has the focus can be put; detect the available

computational resources and alter the
instructions it executes in response; test if its
ability to respond to voice input has been shut
off without user confirmation, and, if so, turn
5 that ability back on and prompt the user to
confirm if that ability is to be turned off;
store both a first and a second set of models for
individual vocabulary words and enable a user to
selectively cause the recognizer to disregard the
10 second set of models for a selected word; and/or
score a signal representing a given word against
models for that word from different word model
sets to select which model should be used for
future recognition.

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Notwithstanding the prior art, the present

invention is neither taught nor rendered obvious
thereby.

SUMMARY OF THE INVENTION

A voice activated/voice responsive item
locator system is disclosed to enable a user to
speak into the system and have the system respond
with location information for an item requested
by the user. For example, shopper at a home
supply store may pick up a locator phone or just
speak into a wall mounted or otherwise situated
microphone and say "Locate Outdoor Paint" or
"Find Hammers" or simply state what is sought
without the use of a verb, e.g. "Caulking". The
system may reply either with voice or visual
(words on a screen, or map), or both voice and
visual, e.g. "Aisle 3, Shelf 4". In some

instances the system will reply, for example,
with a "Repeat", or "Restate in different words"
or "Please talk to information desk" or other
default instructions.

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The locator system may be a stand alone

device, but in most embodiments would be part of
an internal connected system. It could be an
intranet or secured internet system, but would in
many cases be a storewide system with a plurality
of user locations (units, phones, or microphones,
with feedback at each location). The system will
include an embedded voice-driven interface for

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speech control of: (1) operational instructions;
(2) core system locator function operations, that

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is, recognition of specific requests and
responses thereto; and, (3) optional and default

functions. In preferred embodiments, the present invention device is both operated by speech (speech or voice activated) and speech responsive (voice answers and instructions to the user from the system). Thus, the present invention device relies upon automatic speech recognition (ASR), either in place of or in addition to manual locator systems, e.g. book, list, map and computer directories. In some embodiments, user feedback features are included wherein both audio and visual feedback is given to a user in response to recognizable voice signals, while in other possible embodiments, the user may designate audio or visual.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention should be more fully

understood when the specification herein is taken
in conjunction with the drawings appended hereto
wherein:

Figure 1 shows a general schematic diagram
showing software and functional features of a
present invention item locator system;

Figure 2 shows a schematic diagram
illustrating the physical functions of a present
invention voice recognition item locator device;
and,

Figure 3 shows a schematic diagram of a
present invention device illustrating details of
a voice recognition submodule.

DETAILED DESCRIPTION OF THE PRESENT INVENTION

The present invention is a voice
activated/voice responsive item locator and

system. By "item" is meant a place or thing that
a user desires to locate. Thus, a item could be a
particular brand of canned string beans, a type
of outdoor stain, a booth at a convention, a
5 particular part in inventory for sale, assemblage
or distribution, a particular automobile in a
production facility lot or in a large parking
garage, or a room, afunctional group or a person
in an office building or the like. The response
10 may be in the form of a word or sentence
presented visually or audibly and it may
designate an aisle, a shelf, a bin number, a rom
number, a row and slot or space, etc.

The voice recognition system digitizes words
15 spoken via a receiver (microphone) handset,
headset, or built-in microphone for conversion

from analog to digital utilizing a continuous
speech recognition digital signal processor
(DSP). The main support structure may be a
conventional type housing for phones and other
communications devices, may be of a different
shape or configuration or may be built into a
device such as a wall or desk unit, with or
without monitor. They could be portable or
permanently affixed and could be powered by any
means available, e.g. AC or DC current. In the
portable mode, the system would be wireless for
the user and would, in that respect operate like
a cell phone, two way radio, "walkie talkie" or
other short distance wireless device, but would
have a processor at a central or fixed location
having the same features as described above,

i.e., the DSP with programming capabilities, etc.

The DSP is connected to a programmable microprocessor and either by customized input or a standard program, the system enables the user to quickly enter voice-activated fields, e.g.,

such as "Where is...", "Find...", etc.

Verification of voice recognition accuracy (prior to execution) is optional and may be accomplished via synthesized voice playback and/or a screen

confirmation which requires a "YES" or "NO" to execute or open for revision. In some preferred embodiments, a screen, e.g., LCD, enables visual feedback during input phase, with support for deletion, insertion, correction, etc.

Cancellation of the entire command or programming instructions may be possible at any time (prior

to execution), via keystroke or voice command.

The essential features of the present invention involve the creation of a voice based guide or locator to offer enhanced convenience and speed to users for location of one or more items.

Figure 1 shows a general schematic diagram of a present invention system showing general software features and functional features. Thus, the present invention device includes a central processor 1 which may be an external or internal component, i.e., within a single unit or at a separate location from audio receivers and transmitters , e.g., microphones/speakers for user inputs and feedback to users.

The system may be preprogrammed with the

user being required to follow concise
instructions for activation and operation, or may
be programmable to alter, add or enhance ease or
methods of use, e.g. through a limited access
code, for manager inputs 3 of user instructions.

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In any event, manager inputs 3 shall include
functional selections and inputs of items and
their locations, with provision for subsequent
access for modifications. This programming may
include direct keyboard, voice, etc., and, as
mentioned, may include security capabilities for
preventing unauthorized use, e.g. voice
identification (user recognition) or user
security code system, as well as other options
which may be included therein, such as a "help"
detailed manager instruction section.

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Once the system has been programmed for
use, the user operation unit(s) 5 provide
functional access, which may be passive, i.e.,
the user speaks, picks up a phone, presses a
5 button, or otherwise takes some action to
activate the system; or it may be active, i.e., a
proximity sensor, a periodicity timer, or other
internal mechanism may automatically activate the
system and could trigger an audio or visual
10 query, such as "May I help you locate a product?"

Once the system has been activated and a
user has stated the necessary words of input to
activate the device, recognition/non-recognition
response 7 results from processing the user
15 inputs to central processor 1 , and audio and/or
video response unit(s) 9 provide feedback 11 to

the user, either by answering the inquiry,
conditionally defaulting, e.g., asking for a
repeat or a restate the question, or fully
defaulting, e.g. directing the user to a courtesy
5 desk or check out counter for help.

Figure 2 shows a schematic diagram
illustrating a present invention voice
activated/voice responsive item locator system,
showing the physical arrangement and function of
10 components. Thus, symbol 17 indicates an
optional user prompter proximity sensor and
symbol 21 is a microphone or equivalent component
for voice input. The voice input is sent to
audio controller 19 and to automatic speech
15 recognition unit 23 and is converted from analog
to digital signals. CPU/Memory 25 compares the

digital signals to the set up or dictionary of
digital words or phrases in memory. Once a match
is found, the system processor 27 and data
storage 31 operate to respond with an answer or a
5 default instruction or a query by providing
digital text to text-to-speech generator 29,
which provides audio feedback to a user via audio
controller 19 and speaker 33. Feedback to a user
may also be provided on visual screen 37 via
10 display controller 35. Keyboard 39 is used for
manager set up and modifications.

Figure 3 shows the details of one preferred
embodiment of the submodule used in the present
invention device. The voice recognition
15 component converts an acoustic signal into a
sequence of labels. The system takes the raw

acoustic data, and processes it through the recognizer. The recognizer then matches it against a set of models using a decoder that generates a recognition token. This token represents what the user said as either a single word or utterance. The recognizer itself does not interpret the meaning of the recognized output, that is the function of the interpreter (described later). The recognizer uses Hidden Markov Models (HMMs) to provide for a continuous speech recognition engine. HMMs do not process the acoustic signal directly but instead split the signal into a sequence of discrete observations. These observations are derived from a digital representation of the signal that had been converted from the analog signal

generated by the microphone. During recognition,
the likelihood of each model (or sequence of
models) matching the incoming signal is
calculated. The recognizer simply selects the
5 most likely model to decode the signal. As this
is done continuously, the recognizer can process
speech as opposed to isolated words, allowing the
user to talk more naturally.

Each acoustic model represents a short
10 sound. The interpreter combines these sounds
into words using a dictionary. This dictionary
specifies the pronunciation of each word in terms
of the acoustic models. After identifying the
most likely word, the interpreter then joins sets
15 of models together (using a Viterbi decoder) in a
series of pre-defined connections such that paths

can be established to provide for a degree of
"natural language" recognition; in other words,
the user can say "Find hammers", "Where are
hammers" or "hammers" and they are all understood
to mean the same thing. Moreover, these sets of
models and dictionaries are interchangeable,
allowing the same voice recognition component to
be used in a variety of applications.

As the voice recognition component is
running continuously, there needs to be a way to
distinguish background conversations that might
accidentally trigger an unwanted action by the
device. For example, two people standing by a
voice-activated device might be discussing
locations of different goods in a supermarket and
be misinterpreted or undesireably responded to.

To avoid this problem, the recognition unit requires a command word to trigger before beginning further recognition. The trigger word is a user-definable setting.

5 Thus, in Figure 3, initialization 51

initiates monitoring 53 for a trigger word from a
user. When a word is received, it is analyzed to
determine whether or not a trigger word 55 has
been received. If not, signal 57 returns the
10 status to monitoring 53 for a new word. This

loop continues until a trigger word is recognized
and an inactivity timer 59 is started. The
monitor 61 proceeds with the monitoring for the
next word and waits for timer pop 65. When an
15 event 63 is received, timer pop 65 returns to the

monitor 53 to continue the monitoring process and

the voice data is sent to interpretation 67. If
it is understood 69, an action 75 if process and
feedback function 77 is performed. Additionally,
signal 79 prompts user 71. Likewise, if the
5 interpretation is not understood 69, user 71 is
prompted and via signal 73, timer 59 begins
again. These cyclings operate on a continual
basis while the system is initiated. Voice
activation may also be used to shut down the
10 system.

Obviously, numerous modifications and
variations of the present invention are possible
in light of the above teachings. It is therefore
understood that within the scope of the appended
15 claims, the invention may be practiced otherwise
than as specifically described herein.

WHAT IS CLAIMED IS:

1. An item locator system having both voice activation and voice responsive capabilities for location feedback to locate one or more specific items, which comprises:
- a.) a support structure, for physically supporting said system at one or more locations, and functionally containing or connected to the following components:
 - b.) a continuous speech recognition digital signal processor (DSP);
 - c.) a programmable microprocessor interfaced with said speech recognition DSP;
 - d.) sufficient programming and circuitry

user feedback unit, said at least one

user feedback unit adapted to provide

feedback selected from the group

consisting of audio feedback, visual

feedback and combinations thereof, to a

user in response to an item location

query.

2. The system of claim 1 wherein said user feedback unit includes visual display means for viewing visual feedback in the form of text, or map or a combination thereof.

4. The system of claim 1 wherein said memory storage means further includes flash ROM storage and provides for remote diagnostics and system programming.

5. The system of claim 1 wherein said voice input means includes a microphone.

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7. The system of claim 6 wherein said manual control panel further contains a keypad and menu for operation and programming options, a microphone, a screen for input and feedback display.

8. The system of claim 1 which additional components further includes an audio feedback component which includes audio feedback hardware and software adapter to audibly respond to recognizable voice input, including digital-to-analog conversion and an output speaker.

9. The system of claim 1 wherein said DSP includes a continuous speech recognition engine having a continuous speech signal recognizer and a continuous speech signal interpreter.

10. The system of claim 9 wherein said continuous speech recognition engine utilizes tokens of raw acoustic signals representing utterances or words and matches these against a set of models and then relies upon likelihood to select a most likely model to decode signals for interpretation.

ABSTRACT OF THE DISCLOSURE

The present invention is an item location system which relies upon voice activation and responsiveness to identify location(s) of item(s) sought by a user. The system includes a continuous speech recognition digital signal processor, a programmable microprocessor interfaced therewith, voice input and user feedback mechanisms, including audio and/or video feedback. Preferred embodiments utilize audio feedback to the user. The continuous speech recognition engine utilizes Hidden Markov Models to create real time continuous speech recognition and feedback.

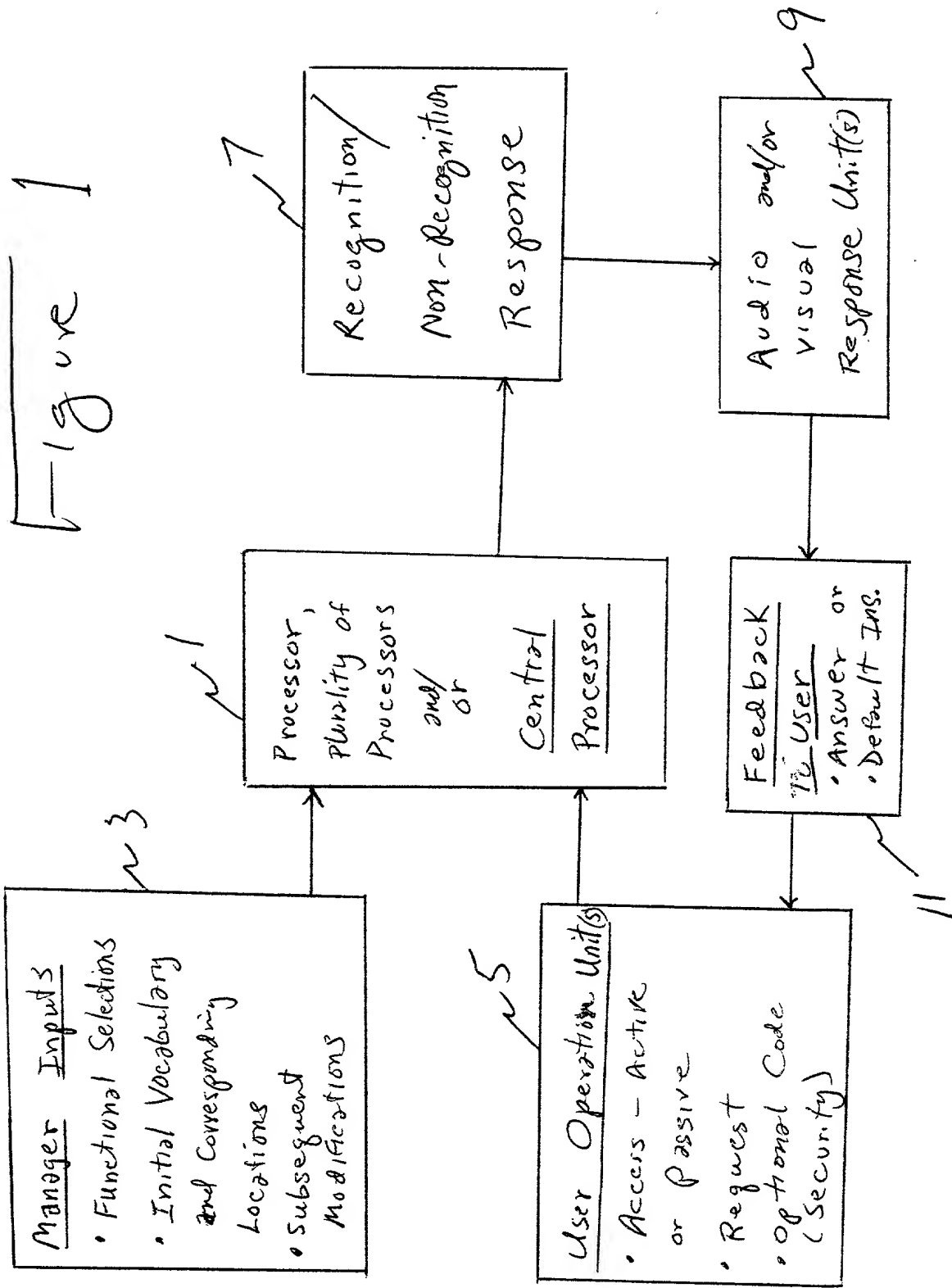
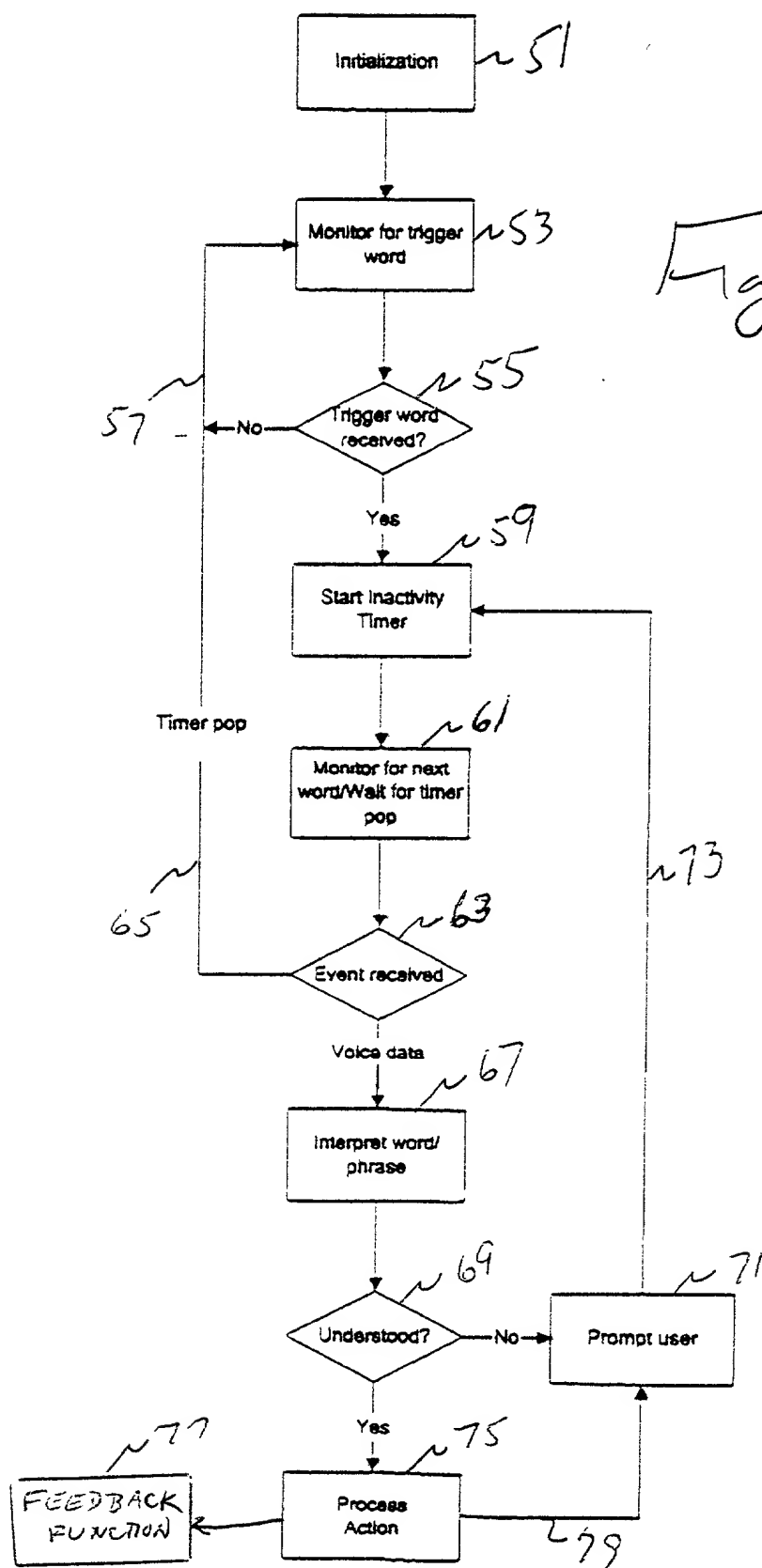


Figure 3



IVC-103A

COMBINED DECLARATION AND POWER OF ATTORNEY
IN ORIGINAL APPLICATION

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As a below named inventor, I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that I verily believe that I am original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought for the invention entitled:

Voice Activated/Voice Responsive Item Locator

the specification, of which is attached hereto, that I have reviewed and understand the contents of the attached specification, including the claims, that I do not know and do not believe the same was ever known or used in the United States of America before my or our invention thereof, or patented or described in any printed publication in any country before my or our invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application filed by me or my legal representatives or assigns more than twelve months prior to this application that I acknowledge my duty to disclose information of which I am aware which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations 1.56(a) and that no application for patent or inventor's certificate on this invention has been filed in any country foreign to the United States of America prior to this application by me or my legal representatives or assigns, except as follows:

FOREIGN APPLICATIONS FILED WITHIN 12 MONTHS PRIOR TO THE FILING OF THIS APPLICATION:

None

FOREIGN APPLICATIONS FILED MORE THAN 12 MONTHS PRIOR TO THE FILING OF THIS APPLICATION:

None

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

FULL NAME OF SOLE OR FIRST INVENTOR Jerome R. Mahoney	INVENTOR'S SIGNATURE <i>J Mahoney</i>	DATE 8/7/2000
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FULL NAME OF THIRD INVENTOR, IF ANY	INVENTOR'S SIGNATURE	DATE
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FULL NAME OF FOURTH INVENTOR, IF ANY	INVENTOR'S SIGNATURE	DATE
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